

G-7

GORDON

MVS/GORDON COMMENTS

St Louis District comments are as follows:

Sept 20, 2001

As stated in the September 6 conference call, SLD outlined several matters of work that still need to be completed before any report writing is to commence.

1. *Comparison Data and Analysis.* As called out in the original "Memorandum of Agreement and Scope of Work" dated 7 April 1999, "Component A", and during initial meetings and discussions between the research team, it was agreed upon, with some reservation by SLD, to attempt to conduct a detailed quantitative analysis of past qualitative large and micro physical bed models performed at ERDC, SLD and MD.

The plan was to develop and use a "cross sectional analysis" program and/or programs on a variety of traditional large scale models and micro models. The goal was to develop a means to evaluate models with different scales and scale distortions in light of their ability to reproduce the prototype. It was also the intent that these programs would be able to be used for future model studies to serve as a tool to gauge the effectiveness of calibration.

Programs were developed by both a contractor and ERDC. From the onstart of usage, AREC experienced problems and bugs that had to be corrected in both programs. Much of the work had to be repeated several times and valuable time was lost as a result. However, after 5 months of persistence and toil, SLD was able to produce the first set of data. As we studied the data, we suspected additional computational program errors occurring in the ERDC program. SLD studied the program code and found that computations were not being calculated correctly in the areas of split channels or middle bars. Also, the computation of the location of the thalweg was also in error. SLD brought this to the attention of MD in May. We made it imperatively clear at that time that the program code should be corrected and then re-run for both the ERDC models and the micro models. We repeatedly made this request.

As of this date, the thalweg problem was corrected but no corrections were made to the split channel problem. These were two major problems noticed by SLD. There could be other problems with other calculations that SLD is not aware of. SLD does not know if the programs were tested properly. Therefore, the data analysis is highly suspect to SLD. SLD does not entertain the proposal by MD to "throw" out data where the calculations are suspect. Along with the intent of the original goal of developing a quantitative analysis tool for both this study and future modeling, the program must be corrected. In addition, it should be carefully re-examined in detail for additional possible errors. Once the program code is corrected and tested, all models and prototype data should be re-analyzed.

Back in February at the original meeting in MD, SLD brought to the attention of the team an observation of major importance. The percentages of cross

sectional variance, model to prototype, were directly dependent on the top elevation used for analysis. Since the analysis was to represent a quantitative and scientific approach to gauge the effectiveness of physical models as they relate to the prototype, SLD have repeatedly and increasingly stated that a range of values should be calculated. This view was conveyed by SLD and debated by MD for several months. Absolutely no willingness of MD to perform this additional work was conveyed throughout the debate. SLD decided to change the program code to analyze their micro model cross sectional data below +20 feet LWRP. This data was sent to MD in July, shortly after the original data sets were sent. Because many of the surveys do not have data available to these higher elevations, an email (7/24/01) from MD stated that they "have problems justifying the vertical extension of the area just to "doctor" the perception of the findings". For MD to suggest that SLD is doctoring the data is preposterous. A response to this email from SLD on 7/26 was unanswered by MD.

Finally, as a meeting was set by MD for the research team, Mr. Gaines stated that he did not want to "get into any more debate concerning this matter but rather focus on developing an outline to wrap the study up." It is because of this and the months of patient debate with no compromise from MD that SLD decided that a meeting was not in order. After we announced that we instead wanted to conduct a conference call discussing the matters, our request was ignored and the meeting was held without our participation.

SLD feels that it is imperative that the comparison analysis (once the program is corrected and tested) be performed at -20, -10, 0, +10, and +20 LWRP for both the micro model and WES data. It should be kept in mind that since these models are not fixed bed models, and the bed is in constant motion during testing, a range of values at various elevations is a much better indicator of the performance of the models as compared to the prototype. The one elevation MD is currently focused on (0 feet LWRP) contains just a small percentage of the overall cross sectional area. Therefore, the changes that occur within the riverbed will cause the cross sectional area below a 0 elevation to vary considerably. The analysis should not be restricted to this one elevation where the most variability occurs. Also, since the original intent was focused on "detail", much more data is required to fully capture this intent. The limited data we now have generated at one elevation is at best a weak shortcut and is of limited scientific value.

In addition, SLD feels that the most important data, the plan view hydrographic surveys or bathymetry from the prototype and from both the ERDC and micro models, should be included as part of the analysis. The surveys visually and qualitatively lay the groundwork for the physical data that is being studied. They should be included in the report. Only including cross sections of models and tables of comparative numbers without including the surveys is a shortcoming to both the reader and the analysis effort.

SLD feels that the above items must be carried out. Anything less than what is proposed falls way short of what we consider a thorough and scientific approach. We feel the comparison of all models to the prototype is a major thrust of this effort and is reflected in the original research agreement. To our knowledge this type of analysis has never been performed on any physical model, therefore it must be done right and with a high degree of reliability and accuracy.

In summary, work still needs to be completed before report writing. The analysis program should be corrected. All models should be re-analyzed at depths of – 20, -10, 0, +10, and +20. Bathymetry of both the prototype and the models should be included in the analysis.

2. *Comments to the Outline.* We cannot comment specifically on the proposed outline because we were not present at the meeting where these topics were discussed. The terms in this outline are vague without explanations. Many of the topics outlined are new to us and we have many questions. We propose that the necessary work discussed above first be accomplished. Once this is complete, we then need to have either another meeting or a conference call to discuss specifics of this outline and prepare a new outline with SLD's input.

Respectfully submitted,

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St. Louis District